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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Plant Introduction Newsletter No.3

Rome, August 1958

These Newsletters represent informal communications addressed only to persons who are directly and actively interested in plant exploration, collection and introduction.

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COMMONWEALTH MYCOLOGICAL INSTITUTE 23 JUL 1959

FAO/58/8/5957

34. XVth International Horticultural Congress, April 1958.

Resolution No.3:

"Having noted the discussions in Section I with reference to the program of action that the Food and Agriculture Organization of the United Nations (F.A.O) has established in the field of "Plant Exploration, Collection and Introduction",

"warmly supports this program and expresses the opinion that international cooperation should be increased particularly in

"the exchange of information and plant material between horticultural plant introduction specialists,

"the preparation of lists and catalogues of available genetic stocks of horticultural crops,

"the organization of a world campaign for the use of better seeds,

"moreover proposes, that the F.A.O. gives assistance to interested countries in order to find ways and means of ensuring the introduction of healthy material, and of avoiding the entry of pests and diseases into the importing countries.

"Suggests that, within the proposed International Society for Horticultural Science, should be established a Committee on Plant Introduction."

35. 10th Session of the European Commission on Agriculture, Rome, Italy, May 1958.

"Plant Exploration, Collection and Introduction.

"The Commission noted that the manuscript of an FAO Agricultural Study on this subject is likely to be published in 1958 in English, French and Spanish and that a Plant Introduction Newsletter has been established to promote exchange of information between specialists interested in this subject. The Commission was informed that contact had been made with the Secretariat of EUCARPIA (European Association for Research on Plant Breeding) but that it had not been possible to have a joint discussion with the appropriate sub-committee of that Association with regard to the possibility of organizing a special system of plant introduction for European countries.".

36. United Kingdom: Expedition of University of Birmingham in Mexico and Central America.

An expedition to Mexico and Central America is planned to take place during the period July/December 1958. It will be led by Dr. J.G. Hawkes, of the University of Birmingham, who will take two assistants, both with previous travelling and collecting experience.

The area chosen is of great interest to potato breeders in that many of the genetic characters conferring different types of resistance to diseases such as Phytophthora and viruses are to be found there. Previous collections of wild potatoes, chiefly from central Mexico, have already been used to good effect by potato breeders in creating resistant commercial varieties. There is good reason to suppose that still more could be done if we possessed a wider range of collections from the same general area. We have, for instance, no living collections from north Mexico, the southern U.S.A., Guatemala, Honduras and Nicaragua; yet we know from the dried specimens collected by other botanists that wild potatoes are to be found in those regions.

From a scientific point of view the area is also of considerable interest in being the probable centre of origin of wild potatoes and the region across which migrations took place between North and South America. Cytogenetical and immunological studies on some Mexican wild potatoes have also shown the particular importance of this general geographical area for an understanding of the evolution of wild potato species.

It is planned to spend about 2 weeks in the southern United States, two months in Mexico, one in Guatemala and one in Honduras and Nicaragua, with a shorter period in each country on the return journey. In this way it is hoped to be able to make both tuber and seed collections from a large number of species and localities so that a reasonable proportion of the genetic variability of wild potato species in this area may be successfully sampled.

In addition to wild potatoes it is hoped to be able to collect Lycopersicon, Phaseolus and Capsicum varieties as well as seeds of cacti for botanic gardens and dried plants for various herbaria.

The expedition is sponsored and partly financed by the University of Birmingham. Additional financial support has been received also from the following sources:-

Royal Society (Great Britain)
Percy Sladen Trust (Great Britain)
Agricultural Research Council (Great Britain)
Scottish Plant Breeding Society (Great Britain)
Dutch Plant Breeding Institute, Wageningen (Holland)
Genetical Institute, Utrecht (Holland)
Max-Planck Institut, Cologne (Germany)
Danish Potato Growers Association (Denmark)
Swedish Seed Association, Svalöv (Sweden)
Inter-regional Potato Introduction Station (U.S.A.)

A portion of each collection will be sent to those contributing organizations that wish to receive material. They will be kept informed by means of interim reports during the expedition and subsequently by a complete account which it is hoped to be able to publish in due course.

37. United Kingdom: Royal Society's plans for expedition to Southern Chile.

Extract from "The Times" of 28 March 1958:

"The Royal Society announced yesterday that plans were being made in cooperation with the Royal Society of New Zealand to send a small expedition to Southern Chile next September (1958). Dr. Martin Holdgate, Zoology Department, Durham University, has been appointed organizer and Mr. G.A. Knox, Canterbury University College, New Zealand, and Dr. J.E. Godley, Director of Botany Division of the New Zealand Department of Scientific and Industrial Research, will take part. The University of Chile also hope to send representatives. The expedition is intended to be exploratory and preliminary to a proposed larger Commonwealth expedition to the South Pacific area.

"The Royal Society say it has been known for some time that many genera and species of animals and plants occur both in South America and New Zealand and Tasmania, but the precise extent of this relationship remains uncertain. It is hoped to acquire knowledge that will help in elucidating the spread of species in the past, in understanding the present-day pattern, and in predicting what may happen. All the areas which it is hoped to investigate were visited by Charles Darwin during his voyage in the Beagle from 1831 to 1836."

38. United Kingdom: Mr. Frank Kingdon-Ward, O.B.E.

With the passing of Frank Kingdon-Ward on April 8, at the age of seventy-two, the last of the great plant collectors and explorers in the Forrest-Farrar tradition has left the scene. It is now no longer possible for westerners to travel alone for months in the vast areas of Tibet, north Burma and western China, where many of the best of the plants now cultivated in our gardens are to be found in their native habitats. Perhaps the artificial barriers which now block the way will one day be lifted but, in any event, conditions have changed. The aeroplane saves weeks of foot-slogging, and modern medicine provides the prophylaxis to keep the traveller fit. No doubt soon the helicopter will deposit the plant collector on the tops of mountains which it would otherwise have taken months to reach.

Those who are prepared to accept the penalties of one-man exploration - the physical hardship, the utter loneliness of months in a strange land among strange people, the nauseating dullness of a diet of tsampa washed down with rancid butter tea and all the inconvenience of travelling "light", must possess exceptional courage, determination, loyalty to their sponsors and devotion to their purpose. These qualities, combined with modesty - for all the great explorers were modest men - are qualities which make men great and Kingdon-Ward possessed them in full measure. He was no mere explorer and plant collector. It is true that his contributions to our knowledge of the geography of Tibet, north Burma and western China were considerable and he made many notable introductions to beautify our gardens. In fact he had done enough in these two fields to have made a name for himself and, indeed, he received many honours from the Royal Geographical Society and the Royal Horticultural Society. He was, however, no mean botanist, plant geographer and plant ecologist, and he wrote much and well on these subjects.

All his expeditions, except the last four, were one-man efforts, and the amount of work he accomplished was outstanding. His specimens were beautifully collected and the notes on them copious. His photography was of a very high standard, and, of course, he was an expert seed-collector.

On his last four expeditions he was accompanied by his wife Jean (née Macklin), to whose devotion and care he himself freely admitted the success of these ventures was due. She has the sympahty of all who know Frank Kingdon-Ward and of the many who know him only through his books and through the objects of beauty, his own introductions, which adorn our gardens.

(BOR, N.L. 1958. Nature, Vol.181, No.4622, pp.1505-6)

39. Sweden: Expedition to Turkey and Iran.

Dr. C.L. Behm, of Hammarö, Sweden, has very kindly provided a brief report on his visit to Turkey and Iran in July, August and September 1957. In Turkey he visited part of the eastern Taurus Mountains south from Van Gölü, and also the environs of Erzurum, Kayseri and Ankara. In Iran the expedition went to the mountains of Sahend, Sabalan and Kara Dagh, all in the northern part of the country. The material collected may be classified as follows:-

		Samples
Leguminous plants		
Trifolium species	42	
Vicia sp.	33	
Medicago sp.	21	
Melilotus sp. etc.	20	
Onobrychis sp.	12	
Phaseolus sp.	12	
Pisum sp.	8	
Cicer sp.	3	
Miscellaneous	8	159
Cereals		
Wheat	39	
Barley	23	
Rye	6	
Oats	1	69
Beta sp.		11
Grasses		109
Miscellaneous		36
		384

The collections made by Dr. Behm in 1955 (Afghanistan, Pakistan and Kashmir) and during the above 1957 expedition are in the hands of a committee at Ultuna, Uppsala, the secretary of which is Dr. S. Bingefors.

40. Germany: Expedition to India and Assam.

An expedition of German scientists visited India and Assam between August 1955 and March 1957 under the auspices of Hamburg University and the Zoological Garden of Wuppertal. Baron Maydell, Prince Wittgenstein, Mr. Schmidt and Dr. Pirson collected zoological and botanical material for German museums and institutes. Most of the work was done in Bombay State, Uttar Pradesh, Bihar and Assam. The botanical collection consists of herbarium specimens of a number of families, mostly monocotyledons, living orchids, wood samples of timber trees, plant and seed material of medicinal, fibre and cultivated species. Special attention was paid to the following genera of Leguminosae: Crotalaria, Indigofera, Desmodium, Phaseolus, Vicia, Teramnes, Uraria, Flemingia, Alysicarpus, Cassia, Caesalpinia and others. The seed collection was handed over by Dr. Pirson to the Institut Für allgemeine Botanik in the University of Hamburg.

41. Morocco: Request for seed.

The Sous-Directeur, Chef de l'Administration des Eaux et Forêts et de la Conservation des Sols (Monsieur J.P. Challot), would greatly welcome samples of seed of Medicago sativa for trial under arid dryland conditions in Morocco. Five types of Medicago sativa have succeeded in trial grounds where the rainfall in 1956 was only 80 mm., with a period of more than 6 months without any rain. These types were: Hunter River Australia, Hunter River V.82 Australia, Poitou (France),Maris de Luçon and Tagiwa Libya. Two lines of Hedysarum coronarium were also successful under these extreme conditions and seed of this material would also be welcome.

42. Lebanon: Collection by FAO Field Officer, H. Pabot.

During his assignment in the Lebanon, Mr. Pabot collected seeds of the following species, which were distributed to plant introduction organizations and plant breeding stations in Australia, Canada, United Kingdom and the United States:-

Dactylis glomerata
D. glomerata hispanica
Bromus tomentellus
Vicia narbonensis
Astragalus hamosus
Poterium polygamum
Medicago sativa
Onobrychis montana
Oryzopsis holciformis
Bromus syriacus

Mr. Pabot is at present on an assignment to Afghanistan where he reports finding a species of Onobrychis under a 300 mm. rainfall. It is hoped that limited supplies of seed of this type will be available on request to FAO Headquarters later this year.

43. Iraq: Collection by FAO Field Officer, J.P.H. van der Veen.

Mr. van der Veen has collected seeds of Dactylis glomerata from the Rowanduz Gorge and tillers from the Hadji Omran area near the Iranian border at about 1,735 m. altitude. These collections of ecotypic material were made on behalf of Mr. R. Knight, of the Waite Agricultural Institute, Adelaide, Australia, who is making an extensive study of ecotypes of Dactylis glomerata in the Near East and other regions.

Collections of vegetative parts of indigenous types of lucerne with creeping or semi-creeping characteristics were also made near Hadji Omran on behalf of Mr. H. Daday, Division of Plant Industry, C.S.I.R.O., Canberra, Australia. These types were, however, not of the winter growing varieties required by Mr. Daday, since their season of growth is March/April until October/November. It is hoped to obtain seeds of these types at a later stage.

44. U.S.A.: Successful introductions.

The article by Desmond D. Dolan, entitled "New Germ Plasm - The Merits and Uses of some Plant Introductions", in Economic Botany, Vol.11, No.3, July/September 1957, pp.244/8, contains a number of examples of successful introductions in the United States, with particular reference to types with resistance to fungus diseases and insect pests.

"Apparently the need for new germ plasm will continue and may become demanding. It will persist as long as there is a possibility of improving present varieties in disease- and insect-resistance or in horticultural and agronomic characters. Crop plants will be plagued with new pests and new forms of old ones. New Plant types and habits will be needed for ever improving methods of harvesting, processing and marketing. All too frequently the need for new germ plasm may become demanding if a particular crop is to be saved or continued in its region of best adaptability."

45. U.S.A.: Survey for steroidal sapogenins and other constituents.

Reference is made to the following paper:-

WALL, Monroe E., FENSKE, C.S., KENNEY, H.E., WILLAMAN, J.J., CORRELL, D.S., SCHUBERT, B.G. and GENTRY, H.S. Steroidal Sapogenins XLIII. Survey of plants for steroidal sapogenins and other constituents. Journal of the American Pharmaceutical Association, Vol.46, No.11, November 1957, pp.653-86.

In continuation of a policy established earlier in this programme, concentrated collecting was carried on for certain genera - Dioscorea, Agave and Yucca - particularly in Mexico, but also in Central and South America. Other collecting was concentrated on particular geographical areas rather than individual plant-groups. Among these regions are included Cuba and the Virgin Islands, Chile and Peru, Turkey, South Africa, and the south-eastern United States. Large collections of some genera under cultivation at the Plant Introduction Gardens at Glenn Dale, Md., and Coconut Grove, Fla., were also supplied for testing. In all, 25 collectors supplied representatives of 101 families included in the 1,000 samples analyzed.

The present report covers the fourth 1,000 plant samples in the United States survey of the plant world for steroidal sapogenins and contains qualitative results for some other constituents. In the collections emphasis was again placed on species of the three genera noted above, partly because these are still the best sources of the steroidal sapogenins, and partly because the objective has been to make the coverage of these three genera as complete as possible. As a result, Yucca is practically complete, Agave is about 60% complete with 160 reasonably available species covered, and Dioscorea is rather complete as regards North and Central America, but the 53 species covered represent not more than 9% of the total in this world-wide genus.

46. U.S.A.: Introductions of sugarcane.

"Possible new commercial varieties of sugarcane and stronger defences against its diseases in this country may result from a recent USDA plant exploration trip to the South Pacific. Carl Grassl, USDA sugarcane breeder, and John Warner, Hawaiian Sugar Planters' Association plant breeder, sent back cuttings and seed of 316 strains and varieties of cane and related wild grasses during the first USDA expedition of its kind since 1928.

"With this substantial deposit in USDA's world collection of sugarcane at Canal Point, Fla., scientists plan to expand breeding and selection of better adapted, higher-producing varieties for higher sugar content, resistance to insect damage and to costly diseases such as mosaic, red rot, root rot, ratoon stunting disease, and others. Ratoon stunting disease reduces the number and size of millable stocks. It alone accounts for an average annual loss of about 20 per cent of the sugar and sirup production from sugarcane plantings in Louisiana, Florida, Mississippi, Alabama, Georgia, Hawaii, and Puerto Rico. This recent collection is highly important to the sugarcane industry of the world since native sugarcane gardens are rapidly disappearing in New Guinea and surrounding areas."

(Crops and Soils, Vol.10, No.4 (January 1958), p.22.

47. U.S.A.: Current activities.

Dr. Howard S. Gentry. Dr. Howard Gentry is at present in Europe continuing the collection of types of herbage plants which he began in 1957 in association with Dr. Harry A. Schoth (see Newsletter item No.22). After brief visits to Portugal and Spain, and a call at FAO Headquarters in Rome, Dr. Gentry proceeded to Greece and Yugoslavia for extensive field collections, particularly in mountain areas.

Dr. Paulden F. Knowles. Dr. P.F. Knowles, specialist in oilseed research at the University of California in Davis, is spending the major part of the summer in the Near East and Mediterranean countries. His speciality is collecting safflower species and ecotypes for future research in the United States. Additional collections of other oilseed crops will be made where opportune.

48. U.S.A.: Review of self-fertilization and population variability.

In his review of self-fertilization and population variability in plants, Stebbins (1957*) refers to self-fertilization as a derived condition from cross-fertilizing ancestors. Self-fertilizing species generally appear to be more specialized in morphological characterisitcs than many of their cross-fertilizing relatives. In many instances they possess highly specialized mechanisms for seed dispersal (Bromus, Hordeum, Medicago, Trifolium); a very high proportion

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* STEBBINS, G.L. 1957. Self-fertilization and population variability in the higher plants. American Naturalist, Vol.91, pp.337-54.

have annual life cycles (Stebbins, 1950), a condition generally regarded by morphologists as being derived from the perennial growth habit. Annual members of the genera mentioned can nearly always be associated in the sum total of their morphological characteristics with perennial species of the same genus.

One of the reasons which Stebbins gives to explain why some species should have given up cross-fertilization, "with its attendant advantages of population variability and genetic heterozygosity", is that self-fertilization is a means of fertility insurance in plants which are subject to periodic drought. Chase (1908) recorded the formation of axillary cleistogamous flowers at the base of plants of species of Stipa and Danthonia which inhabit dry places, and in which the usual culm inflorescences may set little seed under conditions of extreme heat or drought. Self-fertilization is also an advantage in the annual species of regions with a Mediterranean climate, where in dry years conditions favourable for cross-fertilization may be absent altogether.

Indirect supporting evidence is provided by the occurrence under usually favourable conditions of cross pollination in normally self-pollinated species, e.g. the chasmogamous flowers of Bromus with large exserted anthers which are formed during the height of the spring blooming season and are completely absent when plants are forced to bloom in autumn or under low light intensities (Harlan, 1945).

Long distance dispersal is another factor in the origin of self-fertilization In the centres of distribution, where the greatest morphological diversity occurs, self-incompatible, cross-fertilizing species of Bromus, Hordeum and Secale are found, while the geographically isolated species or ecotypes are generally or frequently self-compatible. This correlation "occurs so widely and has such great significance for studies of the origin and migration of genera of flowering plants (Baker, 1955) that it deserves recognition as Baker's law. It was logically and reasonably explained by its author on the assumption that accidental long-distance dispersal of a single propagule can lead to establishment of a colony only in a species capable of self-fertilization. If the type thus established is well adapted to its newly found ecological niche, it can spread throughout the area where these conditions are found, even though its capacity for genetic variation is much reduced. ..... Plant populations adapted to certain types of temporary habitats, particularly annual weeds and other colonizers of newly available situations, possess a considerable selective advantage if they remain constant genetically for periods of many generations, but still can produce occasional bursts of genetic variability. The commonest genetic system which brings about such cycles of alternating variability and constancy is that of predominant self-fertilization, with the capacity for occasional outcrossing being nevertheless retained." (Stebbins, loc.cit.).

BAKER, H.G. 1955. Self-compatibility and establishment after "long-distance" dispersal. Evolution, Vol.9, pp.347-88.

CHASE, A. 1908. Notes on cleistogamy of grasses. Bot.Gaz., Vol.45, pp.135-6.

HARLAN, J.R. 1945. Cleistogamy and chasmogamy in Bromus carinatus Hook. and Arn. A.J. Bot., Vol.32, pp.66-72.

STEBBINS, G.L. 1950. Variation and evolution in plants. Columbia Univ. Press, 643 pp.

49. Latin America: Instituto Interamericano de Ciencias Agrícolas de la O.E.A.

La Tercera Reunion del Consejo Técnico Consultivo se celebró en Santiago, Chile, del 10-13 marzo 1958.

Resolución No.17: Conservación de especies cultivadas nativas de la flora americana y de sus probables antecesores silvestres

El Consejo Técnico Consultivo

Considerando:

Que resulta de gran interés científico y agronómico estudiar y mantener colecciones vivas de las plantas cultivadas de origen americano y de las especies estrechamente emparentadas con las mismas.

Que una tarea tan vasta e importante, sólo puede ser llevada a cabo en una forma integral por un organismo de la naturaleza del Instituto Interamericano de Ciencias Agrícolas, en íntima cooperación con los gobiernos americanos interesados:

Resuelve:

1. Recomendar al Director del Instituto Interamericano de Ciencias Agrícolas:

a) Que inste a los Gobiernos americanos a destinar recursos y personal para que en algunas de sus estaciones experimentales se mantengan colecciones vivas de plantas cultivadas de origen americano, y de las especies emparentadas.

b) Que el Instituto Interamericano de Ciencias Agrícolas estudie la planificación y coordinación del plan general de trabajo y estimule la formación de equipos integrados por botánicos y agrónomos que se dediquen a la búsqueda, estudios y mantenimiento del material que se coleccione. Es recomendable además la publicación periódica de un inventario para facilitar el intercambio de material.

c) Que el Instituto Interamericano de Ciencias Agrícolas estudie la coordinación de esta labor con la que puedan llevar a cabo otros organismos en programas similares.

50. Brazil: Seed of Bromus auleticus

FAO Field Officer Willem Nieuwenhuijs, at present stationed in Belém, has obtained a small sample of seed of this species from Rio Grande do Sul; sub-samples are available on request from FAO Headquarters (ref: FAO-6260).

51. South America: Collections in Argentina and Chile.

Professor H. Brücher (see Newsletter item No.25), reports on 28 March 1958 that the expedition was in the field for several months and made a large collection of wild potatoes, primitive potatoes and land races of many crops. New species of tuber-bearing Solanum were found as well as new wild forms of cultivated plants. At the conclusion of the expedition in the north Argentinian gene centre, Dr. Brücher and Dr. P.N. Zhukovski proceeded to Chile to investigate the distribution of the potato on the island of Chiloé. Dr. Gottschalk, of the University of Bonn, has returned to Germany; the collections for the Netherlands Institute at Wageningen were continued . Dr. Brücher plans to maintain in

Mendoza, Argentina, a living collection of types from the Argentinian gene centre.

52. Australia: Expedition to Chile.

For some time the Division of Plant Industry, C.S.I.R.O., Canberra, has regarded a plant collecting expedition to Chile as of very considerable importance since this is a part of the world with a Mediterranean climate from which little or nothing in the way of new types has been obtained in the past. It appears to Mr. William Hartley, Principal Plant Introduction Officer, that the introduction of plants from the American continent which have had a completely different evolutionary background, offers a wider scope than is usually the case when plants are introduced from a region which has not had a wholly independent development. Arrangements have now been made to send Mr. Eric Bailey, of the Division of Plant Industry staff in Western Australia, to Chile, where he will make collections primarily of herbage plants in association with the technicians of the Rockefeller Foundation Agricultural Program in Chile

53. India: All-India Plant Introduction and Exploration Organization

The Government of India, through the Ministry of Food and Agriculture, have set up an All-India Plant Introduction and Exploration Organization in the Division of Botany at the Indian Agricultural Research Institute, New Delhi. This Organization will have four regional substations in different climatic regions of the country.

The Organization is interested in the collection, by exchange and by exploration, of plant material of agricultural and horticultural plants, and also of various other kinds of economic plants, with particular reference to the collection of plant species or varieties showing resistance or tolerance to saline and alkaline conditions. The reports on the assessment of various collections are published periodically in Plant Introduction Reporters. A seed exchange list is also being maintained which is available on request.

For exchange of information and material, requests should be made to the Head of the Division of Botany or the Plant Introduction Officer.

54. South Pacific Commission

The Plant Introduction Officer for the Commission, Dr. J. Barrau, (address: Pentagon, Anse Vata, Noumea, New Caledonia), has established a Plant Collection and Introduction Newsletter for distribution to members of the South Pacific Commission Consultative Committee on Plant Collection and Introduction. The first issue is dated 21 January 1958, and gives in considerable detail a review of the South Pacific Commission plant collection and introduction work in 195 and information on plant exploration activities, developments and trends in the field of plant introduction in the South Pacific area with particular reference to cacao, coffee, black pepper, bamboos and pasture and fodder plants.

Under a Yale-Bishop Museum fellowship, Dr. R.C. Cooper, botanist of the Auckland Institute and Museum, undertook a study of Colocasia taros and sweet potatoes in the South Pacific area in 1955. The Plant Introduction Officer, Dr. Barrau, then in charge of the survey of food plants and subsistence horticulture, had the opportunity to assist Dr. Cooper in his work which, among other

things, resulted in the assembling of an important taro collection in Naduruloulou gardens. Moreover, as part of the same research, a very important collection of sweet potato varieties was assembled in New Zealand, including several South Pacific varieties. This work is now being continued with a Rockefeller Foundation grant. The SPC Plant Introduction Officer is in close contact with Dr. R.C. Cooper and Dr. D. Yen, who are doing this research. When Dr. Cooper's study of the taro varieties assembled in Naduruloulou are completed, it is planned to undertake with these varieties field experiments and possibly a mass selection work. Following the decisions of the South Pacific Commission, the Plant Introduction Officer started to assemble documentation and observations on the breadfruit varieties growing in the area. It is hoped that this work could lead to the selection of some varieties suitable for inter-territorial exchange.

The attention of members of the Committee has been drawn to quarantine problems encountered in the work of the Commission in the field of plant introduction, with special reference to the following:-

a) According to the recommendations of the FAO second meeting of the Plant Protection Committee for South East Asia and the Pacific region (held at Kandy, Ceylon, December 1957), any shipments of coffee seeds sent to the South Pacific islands through the SPC plant introduction service will now be accompanied by instructions to sterilize the surface of the seeds with a mercuric fungicide before planting.

b) Dr. F. Bugnicourt, plant pathologist and Director of the Institut Français d'Océanie, has recommended to the SPC plant introduction service that any shipment of rice seeds sent through this channel to the South Pacific islands be accompanied by instructions for treating the seeds before planting by dipping in a solution of 3/1000 of commercial formaldehyde for 24 hours, the seeds which float then being destroyed.

55. Ethiopia: Coffea arabica

During a recent visit to Ethiopia, the FAO Tropical Crops Specialist had the opportunity to get acquainted with exploratory work on "forest" arabica coffee which is being carried out in the Gimma area by Messrs. H.F. Rouk and I.E. Siegenthaler, local ICA experts, with the scientific co-operation of Prof. Edgard E. Anderson. A "coffee forest", probably a subspontaneous population or escape from ancient cultivation has been chosen and 140 coffee plants have been subjected to a detailed morphological analysis to study the degree of variability of numerous characters. The progenies, derived from seed of open-pollinated flowers, are also being studied in a replicated trial, the first yields having been obtained in 1957.

In previous years, two FAO ETAP experts, Messrs. P. Sylvain and J.B.H.Lejeune have made preliminary studies on wild and subspontaneous arabica coffee in this country. Some of the material collected by them is now grown in various coffee collections in the tropics. Various progenies have also been tested for resistance to the coffee rust (Hemileia vastatrix) and some of them have shown high resistance. Much of this material is of great value for breeding work.

56. South Africa: Seed of Ermelo lovegrass

A small sample of seed of this promising grass has been received from Dr. J.P. Botha, Chief, Division of Crops and Pastures, Department of Agriculture, Private Bag 124, Pretoria; sub-samples are available from FAO Headquarters on request (ref: FAO-5805).

57. Tropics in general: FAO projects concerning plant exploration

As soon as sufficient funds are available, FAO has proposed to organize the following plant exploration expeditions:

a) Coffee. Considering that a taxonomic revision of the genus Coffea, based primarily on new material to be collected, is necessary, that there is a great need for more ample genetic material to be made available to coffee breeders and, finally, that the native flora in many areas in the tropics, to which coffee species are native, is being rapidly destroyed due to the expansion of agriculture, three expeditions are envisaged to make detailed collections of coffea species: (i) in West Africa, including French Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Dahomey, Nigeria, the Cameroons, French Equatorial Africa, Belgian Congo and Angola; (ii) in East Africa, including Ethiopia, Sudan, Kenya, Uganda, Tanganyika, Mozambique, Zanzibar, Madagascar, Comore Islands, Réunion and Mauritius, and (iii) India, Ceylon, Burma, Thailand, Malaya and Indonesia. The African regions are of particular importance as they are the homes of the most important species: C. arabica, C. canephora, C. liberica, C. Deweurei and C. congensis.

b) Cacao. In spite of the fact that various expeditions, particularly the one directed by Pound (1938), have resulted in valuable additions to existing collections of Theobroma and have provided breeders with important material, a new attempt should be made to collect more types of this genus, not only in north-west South America, but also in Central America and Mexico where cacao was introduced in pre-Colombian times. More information should also be gathered on the most probable place of origin of this genus.

c) Rubber: There is a great need to further diversify the basic Hevea material now available to breeders. Many collections have already been made in the Amazon Basin. However, a great wealth of genotypes still exists there to be collected and used for future breeding projects, to develop still higher yielding strains and clones producing better quality rubber. This is essential for natural rubber in its fight for survival with the synthetic rubber industry.

Combined with these projects are others dealing with the establishment of world coffee, cacao and rubber collections in selected areas in the tropics and the varrying out of basic taxonomic and genetic research.

58. FAO List of National Plant Quarantine Services

Circulated with this Newsletter is an up-to-date list of national plant quarantine services produced by Plant Production Branch, Agriculture Division, May 1958. This list, which supersedes previous lists published under the same title, contains names and addresses of national agencies responsible for the administration of plant quarantine in various countries and territories and the names of the officers in charge. It was compiled in response to enquiries in order to facilitate direct contact between these agencies. In order to keep the list up to date, FAO would appreciate being informed of any changes in national plant quarantine services. A form for reporting such changes is attached to the list.

All correspondence with regard to the project in general should be addressed to: Dr. R.O. Whyte, Plant Production Branch, Agriculture Division, FAO, Rome, Italy. Those wishing to be included on the mailing list for further issues of these Newsletters are requested to inform the above.

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59. Germany: Expedition to Peru, Bolivia, Argentina and Chile

The following is an extract from a letter just received from Professor W. Rudorf of the Max-Planck-Institut, Cologne-Vogelsang:-

"I wish to inform you that in connection with the International Genetic Congress in Canada I will, following an invitation of the Rockefeller Foundation, visit the Agricultural Program of this Foundation in Mexico, particularly with regard to research on Phytophthora resistance of potatoes. From Mexico I will proceed to Peru, Bolivia, Argentina and Chile, where I will give lectures and make arrangements for a study trip and collecting expedition to these four countries. The objective of this expedition will be to collect new foundation material of wild forms of native crop plants such as potatoes, tomatoes, beans and others; ecological studies will be made in the places visited and investigations on resistance against diseases and pests (nematodes and others) will be carried out on the spot in order to avoid collecting material of wild and primitive species which is of no interest. The expedition will be initiated from Argentina in December. The participants will be: two scientists from our Institute (Dr. H. Ross and Dr. R. Rimpau), and a botanist (Dr. Diers) from the Botanic Institute of the University of Cologne. Duration of the expedition: 6 months."